

# Frequency and histopathological type of laryngeal tumours at the University Hospital of Kinshasa, Democratic Republic of the Congo

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## ABSTRACT

### Introduction

Laryngeal tumours are common and affect people of all ages.

### Objective

This study aims to determine the frequency, clinical characteristics, and histopathological profile of laryngeal tumours at the University Hospital of Kinshasa, Democratic Republic of the Congo

### Methods

This retrospective study was conducted over an 11-year period from 2013 to 2023. All patient records with clinical data and well-documented histological results of laryngeal tumours were included. Data were analysed using SPSS 27.0 software and presented as percentages, means, or medians.

### Results

A total of 105 patients with laryngeal tumours were included, of whom 25.7% had benign tumours and 74.3% had malignancies. The mean age of patients was  $55.9 \pm 16.5$  years, ranging from 5 to 79 years. Males predominated, accounting for approximately three-quarters of the cases. The median time to consultation was 12 months, with a range of 1 to 60 months. All patients with laryngeal tumours reported dysphonia. Dyspnoea was reported by 92.3% of patients with malignancies and 74.1% of those with benign tumours. About two-thirds of the malignant tumours and three-quarters of the benign tumours were located in the glottic area. The most common histological types were squamous cell carcinoma (89.7%) for malignancies and papilloma (85.2%) for benign tumours.

### Conclusion

These findings illustrate that laryngeal tumours are frequent in our setting. Increased awareness is needed to promote preventive measures against this condition.

## INTRODUCTION

Laryngeal tumours are a significant health concern due to their frequency and severity (Baird et al., 2018). Despite early warning signs, a large number of laryngeal tumours are diagnosed at a relatively advanced stage, particularly in resource-limited countries (Ly, 2009). The diagnosis of laryngeal tumours is primarily based on endoscopy and anatomical pathology, the latter of which specifies the tumour's characteristics (Marninchi et al., 2010).

Benign tumours of the larynx constitute a heterogeneous group of tumours, most of which are rare (Villeneuve, 2016). Their reported incidence in the literature ranges from 6 to 79.8 cases per year (Tuljapure et al., 2018). These tumours involve all structures of the larynx and include pseudo-tumoral inflammatory formations as well as true benign tumours, such as the vocal polyp, which is the most common benign tumour lesion (Sachdeva et al., 2022). The most predominant histological type among malignant laryngeal tumours is squamous cell carcinoma (Nocini et al., 2020). Laryngeal cancer accounts for 30% to 40% of head and neck cancers and remains the most common malignancy in the field of otorhinolaryngology (Igissin et al., 2023). Globally, 184,615 new cases of laryngeal cancer are recorded annually, representing 1.1% of all cancer cases (Igissin et al., 2023). In Europe, 35,981 cases were reported in 2017, while in the United States, 13,150 cases were recorded in 2018 (Shuaibu et al., 2021). In Africa, a study conducted in Nigeria from 2011 to 2020 identified 101 patients with laryngeal cancer (Shuaibu et al., 2021).

In the Democratic Republic of the Congo (DRC), research on laryngeal tumours was conducted at the University Hospital of Kinshasa approximately 40 years ago, but the findings were never published. Furthermore, treating these tumours remains challenging due to late presentation, patients' reluctance to undergo surgery that may affect their voice, the limited number of oncology centres, and the low rate of laryngeal surgeries performed. Despite the increasing number of laryngeal tumour cases observed in our setting, there is a lack of recent published data. This gap in research highlights the need for this study.

## METHODS

A descriptive and analytical retrospective study was conducted in the Otorhinolaryngology Department of the University Hospital of Kinshasa in the DRC over an 11-year period from 2013 to 2023.

All patient files with clinically and histologically confirmed laryngeal tumours were included in this study. The useful data were collected from consultation, hospitalisation, and surgical records. Additionally, phone calls were made to patients or their family members when necessary.

Occupations were classified into two groups:

1. **Professions involving vocal strain** (e.g., military/police officers, teachers, and itinerant traders).
2. **Professions without vocal strain risk** (e.g., unemployed/housewives, civil servants, freelancers, and students).

Clinical variables included patient complaints, time to consultation, medical history (e.g., smoking status, alcohol consumption, gastroesophageal reflux disease, and other conditions), tumour location, gross appearance of the tumour during endolaryngeal examination, histopathological findings from biopsy specimens, and tumour staging using the TNM classification.

This research received ethical approval from the National Health Ethics Committee (Approval No. 605/CNES/BN/PMMF/2024).

For statistical analyses, data were encoded in Excel 2016 and analysed using SPSS 27.0 software. Quantitative variables with a normal distribution were presented as means ( $\pm$  standard deviation), while non-normally distributed variables were summarised as medians with minimum and maximum values. Qualitative variables were expressed as frequencies and percentages.

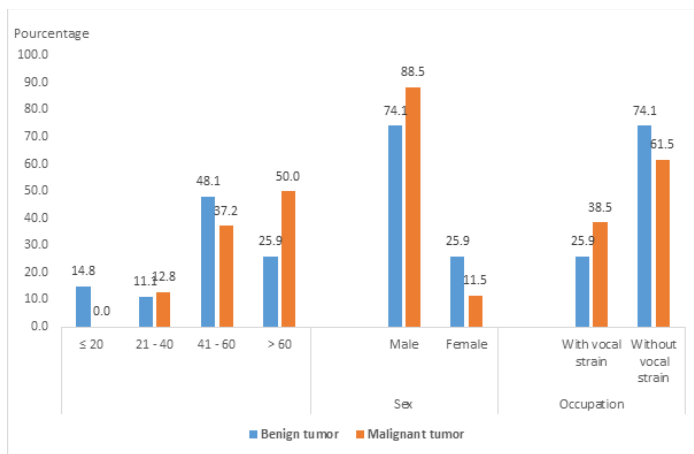
Comparisons between two proportions were conducted using the chi-square test or Fisher's exact test, while the Student's t-test was used to compare two means. A **p-value** < 0.05 was considered statistically significant.

**RESULTS**

During the study period, out of a total of 311 patient records with tumors of the ear, nose, and throat (ENT) sphere, 105 (33.8%) patients had a laryngeal tumor with histological evidence. Of these laryngeal tumors, 27 (25.7%) were benign, while 78 (74.3%) were malignant. The mean age of patients with laryngeal tumors was 55.9 ± 16.5 years, with extremes of 5 and 79 years. Patients with benign tumors (46.4 ± 18.9 years) were significantly younger than those with malignancies (59.2 ± 14.3 years; *p* < 0.001).

Figure 1 illustrates that malignancies were most prevalent in patients over 60 years of age, accounting for 50.0% of cases, whereas benign tumors were predominant in the age group of 41 to 60 years (48.1%). Male patients constituted approximately three-fourths of both the benign and malignant tumor groups, with no statistically significant difference. Occupational exposure, whether involving vocal strain or not, did not significantly differ between the two groups.

**Figure 1:** Sociodemographic characteristics of patients with laryngeal tumors



Dysphonia was the most common complaint among all patients with laryngeal tumors, followed by inspiratory dyspnea. Patients with malignant tumors presented significantly more cases of dyspnea (*p* = 0.036) and mixed dysphagia (*p* = 0.029) than those with benign tumors. The other symptoms showed no statistically significant differences between the two groups (Table 1).

The majority of patients with malignancies (50.0%) presented to the ENT department more than one year after symptom onset, whereas 40.7% of patients with benign

tumors sought medical consultation between six months and one year after symptom onset.

Alcohol use was the most frequently reported history among patients with malignant tumors, with a statistically significant difference compared to the benign tumor group (71.8% vs. 48.1%, *p* = 0.035). Other reported medical history variables did not show a statistically significant difference between the two groups (Table 1).

Tobacco use and chronic laryngitis were observed in small proportions in both groups.

**Table 1:** Clinical characteristics of laryngeal tumors

Symptoms	Malignant Tumor (n %)	Benign Tumor (n %)	<i>p</i> -value
Dysphonia	78 (100.0)	27 (100.0)	-
Inspiratory dyspnea	72 (92.3)	20 (74.1)	0.036
Productive cough	26 (33.3)	4 (14.8)	0.077
Mixed dysphagia	21 (26.9)	2 (7.4)	0.029
Dysphagia to solids	11 (14.1)	1 (3.7)	0.164
Dry cough	10 (12.8)	4 (14.8)	1.000
Neck pain	10 (12.8)	-	0.061
Earache	9 (11.5)	1 (3.7)	0.783
Adenopathy	1 (1.3)	-	1.000
Dysphagia to liquids	1 (1.3)	2 (7.4)	0.269
<b>Medical History</b>			
Alcohol use	56 (71.8)	13 (48.1)	0.035
Tobacco use	30 (38.5)	6 (22.2)	0.236
Chronic laryngitis	29 (37.2)	8 (29.6)	0.498
Alcohol and tobacco use	28 (35.9)	6 (22.2)	0.237
Gastroesophageal reflux disease	12 (15.4)	1 (3.7)	0.176
Hypertension	22 (28.2)	5 (18.5)	0.445
Diabetes	3 (3.8)	1 (3.7)	1.000
Pulmonary tuberculosis	3 (3.8)	1 (3.7)	1.000
<b>Duration of Symptoms (months)</b>			
<6	10 (12.8)	6 (22.2)	0.377
6-12	29 (37.2)	11 (40.7)	-
>12	39 (50.0)	10 (37.0)	-
<b>Median (Min-Max)</b>	12.5 (2-60)	12.0 (1-60)	0.347

Endolaryngeal examination (Table 2) revealed that the macroscopic appearance of benign laryngeal tumors was budding in 81.5% of cases and polypoid in 18.5%. Among malignant tumors, approximately three-fourths had a budding appearance, while one-fourth had an ulcerative budding appearance. Both benign and malignant tumors

were most frequently located in the glottic area, followed by the supraglottic region. Among patients with malignancies, 79.5% had not been staged due to a lack of radiological data.

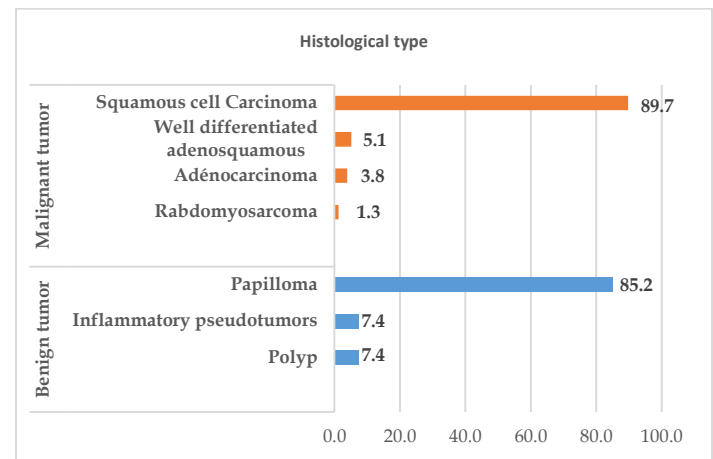
Among the 16 staged patients, more than half had advanced disease (stages III, IVa, IVb, and IVc) (Table 2).

**Table 2:**  
Anatomopathological characteristics of laryngeal tumors

Variables	Malignant Tumor (n %)	Benign Tumor (n %)	Total (n %)
<b>Macroscopic Aspect</b>			
Polypoid	-	5 (18.5)	5 (4.8)
Budding	59 (75.6)	22 (81.5)	81 (77.1)
Budding ulcer	19 (24.4)	-	19 (18.1)
<b>Site of Laryngeal Tumor</b>			
Glottic	52 (66.7)	19 (70.4)	71 (67.6)
Glottic Substance	15 (19.2)	4 (14.8)	19 (18.1)
Subglottic	5 (6.4)	1 (3.7)	6 (5.7)
Two sites	4 (5.1)	3 (11.1)	7 (6.7)
Three sites	2 (2.6)	-	2 (1.9)
<b>Stage</b>			
III	8	-	8 (10.3)
IVa	3	-	3 (3.8)
IVb	1	-	1 (1.3)
IVc	4	-	4 (5.1)
Unstaged	62	-	62 (79.5)

Histopathological analysis showed that papilloma was the most predominant benign tumor (85.2%), followed by inflammatory pseudotumors and polyp tumors. Among malignant tumors, squamous cell carcinoma was the most common (89.7%), followed by adenosquamous carcinoma and adenocarcinoma. Squamous cell carcinoma was well-differentiated in 87% of cases and moderately differentiated in 13%.

**Figure 2:**  
Histological types of laryngeal tumors



## DISCUSSION

The present study, which aimed to determine the frequency and clinical and histopathological profile of laryngeal tumors at the University Hospital of Kinshasa, found that among patients with laryngeal tumors, three-quarters had malignant tumors, while one-quarter had benign tumors. The frequency of malignant tumors observed in our study is higher than that reported by Dzon et al. (2020) in Congo Brazzaville (46 cases) but lower than the frequency reported by Shuaibu et al. (2021) in Nigeria (101 patients) over a similar duration. The frequency of benign tumors in our study is also lower than those reported by Sachdeva et al. (2022) and Doloï and Khanna (2011) in India, who recorded 36 patients over 4.5 years and 80 patients with benign tumors over two years, respectively. The generally low frequency of laryngeal tumors in the present study could be attributed to the late referral of patients to ENT specialists by general practitioners and the inaccessibility of ENT specialists due to financial constraints.

In our study, benign tumors predominantly affected individuals aged 41 to 60 years. However, several studies have reported a higher prevalence of benign tumors in patients younger than 40 years (Sachdev et al., 2020; Doloï et al., 2011; Sharma, 2013). This discrepancy may be due to the relatively small sample size of our study. Conversely, the frequency of malignancies increased with age, with an average patient age of 59.2 ± 14.3 years, and the majority of patients (50%) were over 60 years of age. This finding is

consistent with other studies (Shuaibu et al., 2021; Dzon et al., 2020).

A predominance of male patients was noted in our study, a trend that has also been reported in several other studies (Gheorghe et al., 2023; Sharma, 2013). In our setting, men consume more alcohol and tobacco than women, which may explain this predominance.

Dysphonia was observed in all patients, regardless of the tumor type. This finding aligns with the studies by Shuaibu et al. (2021) and Dzon et al. (2020), who reported similar observations. Dysphonia can be explained by the fact that most laryngeal tumors in our study were located in the glottic area, with reduced or fixed vocal cord mobility in approximately three-quarters of cases, thereby disrupting normal glottic sound emission. These results are consistent with those of previous studies (Doloi & Khanna, 2011; Sharma et al., 2013). However, Karatzanis et al. (2014) in Germany reported that the supraglottic stage was the most commonly affected stage in their study.

The median consultation time for patients in our study was 12 months (range: 1–60 months). This is similar to the consultation time reported by Pegbessou et al. (2014) in Togo (median: 13.5 months; range: 1–96 months for patients with laryngeal papillomas) but slightly shorter than the consultation time reported by Shuaibu et al. (2021) in Nigeria (mean:  $16.9 \pm 9.9$  months for patients with malignancies). In contrast, Sharma et al. (2013) in India found that patients with benign laryngeal tumors sought medical attention earlier (within six months or more). The long delay in seeking medical consultation in our setting may be attributed to the trivialization of early symptoms (e.g., dysphonia and dysphagia), the inaccessibility of ENT specialists due to financial constraints, the preference for traditional medicine, and certain religious beliefs.

In the present study, alcohol consumption was the only statistically significant factor associated with malignancies. This finding aligns with a systematic review by Jun et al. (2023), which concluded that light to moderate alcohol consumption was associated with a higher risk of laryngeal cancer. In our setting, this could be explained by the consumption of certain types of alcohol containing carcinogenic substances and the chronic irritation of the laryngeal mucosa by alcohol (Nachalon et al., 2017).

In contrast to our study, Sachdeva et al. (2022) in India and Nachalon et al. (2017) in Israel identified smoking as the primary risk factor. Similarly, Sharma et al. (2013) in India found that the combination of alcohol and tobacco was the leading predisposing factor (73.2%).

Among the benign tumors in our study, papilloma was the most common histological type, followed by polyps and inflammatory pseudotumors. However, other studies that diagnosed tumors based on endoscopic and histopathological examinations have reported polyps as the predominant benign tumor type (Sachdeva et al., 2022; Sharma et al., 2013). The predominance of papilloma in our study may be explained by the fact that we included only benign tumors confirmed through histopathological examination.

Among malignant tumors, squamous cell carcinoma was the most frequently reported histological type. This finding is consistent with numerous studies (Shuaibu et al., 2021; Dzon et al., 2020; Sharma et al., 2013).

This study has some limitations. Due to its retrospective design, some data were missing. Furthermore, this hospital-based study does not reflect the overall prevalence of laryngeal tumors in the general population. Nevertheless, this is the first study to evaluate the profile of all laryngeal tumors in our setting, and it will serve as a reference for future research. The findings from this study provide a foundation for further investigations, particularly large-scale, multicenter longitudinal studies aimed at assessing the management of laryngeal tumors and identifying associated risk factors in the general population.

## CONCLUSION

Laryngeal tumors are common, with malignant tumors being the predominant type. Laryngeal papilloma and squamous cell carcinoma were the most frequently observed histological types in our clinic.

It is therefore necessary to implement early detection programs for ENT cancers in the general population to improve the management of laryngeal tumors.

**Ethical Approval:** This research received ethical approval from the National Health Ethics Committee (Approval No. 605/CNES/BN/PMMF/2024).

**Conflicts of Interest:** None declared.

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